REMARKS

In response to the Office Action mailed October 28, 2005, Applicants respectfully request reconsideration. To further the prosecution of this Application, Applicants submit the following remarks, have canceled a claim and have added new claims. The claims as now presented are believed to be in allowable condition.

Claims 1-20 were pending in this Application. By this Amendment, claim 20 has been canceled. Applicants expressly reserve the right to prosecute at least some of the claims, as originally submitted, and similar claims in one or more related Applications. Claims 21-28 have been added. Accordingly, claims 1-19 and 21-28 are now pending in this Application. Claims 1, 5, 15 and 19 are independent claims.

Preliminary Matters

Applicants wish to thank Examiner Chandran for the clarity and detail provided in the Office Action. This enabled Applicants to better prepare a response in connection with the claims.

Additionally, Applicants wish to point out that the name of the listed Examiner for the present Application is "**Biju Chandran**". Furthermore, the Examiner cited, against all of the claims in the present Application, pending U.S. Application No. 09/967,785 (U.S. Publication No. 2003/0063440 A1) which lists, as the first named inventor, "**Biju Chandran**". Applicants respectfully assume that the Examiner of the present Application and the first named inventor of the above-cited reference are different people who coincidentally have the same name. Applicants expressly and respectfully request that the Examiner confirm this understanding in the next correspondence from the Patent Office.

Applicants further wish to respectfully point out that 37 CFR 10.111 (Avoiding even the appearance of impropriety) states that "A practitioner shall not accept private employment in a manner in which he or she had personal responsibility while a public employee." In the event that the Examiner and the

first named inventor of the primary reference are indeed the same person, Applicants wish to remind the Examiner of owed duty of disclosure under 37 CFR 1.56(a) and MPEP 2001.03 which states that "**all**" associated with the filing and prosecution of a patent application, including the Examiner, have a duty of disclosure to the Office of such material information.

Rejections under §103

Claims 1-13 and15-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2003/0063440 A1 (Chandran et al.) in view of U.S. Publication No. 2001/0030037 A1 (Hellbruck et al.). Claims 14 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chandran et al. in view of Hellbruck et al. as applied to claims 13 and 19 above, in further view of U.S Publication No. 2003/0048610 A1 (Herring et al.).

Applicants respectfully traverse each of these rejections and request reconsideration. The claims are in allowable condition because they patentably distinguish over the cited prior art.

Chandran et al. (hereinafter simply "Chandran") discloses a package retention module coupled directly to a socket (Title). In Chandran, a retention module 100 includes a socket 130, at least one retention arm 120, and at least one clamping bar 110 (paragraph 0013 and Fig. 1). The clamping bar 110 is coupled to the retention arm 120 on the end opposite the socket 130 to secure placement of a heat sink 210 against a surface of a package assembly (paragraph 0013 and Fig. 1). The retention arm(s) 120 are rotatably affixed to the socket 130 (paragraph 0015 and Fig. 1). Spring force of the retention arm(s) 120 may be modulated by modifying the curve and thickness of the retention arm(s) 120 (paragraph 0020 and Figs. 1 and 2).

Hellbruck et al. (hereinafter simply "Hellbruck") discloses a spring clip for fixing semiconductor modules to a heat sink (Title). In Hellbruck, a module 2 is fixed to a heat sink 1 (paragraph 0031 and Fig. 1). A bearing side 1a is provided on the heat sink 1, and is clamped to the heat sink 1 by two spring clips 4

(paragraph 0031 and Fig. 1). With reference to Fig. 5a of Hellbruck, in a first step, two inserted specially configured spring clips 5 are placed by bearing side 2a onto a bearing area 1a of a heat sink 1 headfirst, i.e., with a circuit carrier pointing upward (paragraph 0049). In the inserted state, a bent end 5g is opposite a tooth 3g of the respective first spring clip receptacles 3a at a short distance (paragraph 0049 and Fig. 5a). In a second step, the two specially configured spring clips 5 are latched by their bent end face 5g via the tooth 3g into the respective first spring clip receptacles 3a (paragraph 0049 and Fig. 5b). Latching is complete by application of lateral force and a resultant rocking of the specially configured spring clip 5 about its first bending edge 5b (paragraph 0049). A curb 3f helps ensure that the specially configured clip 5 does not slip out from a basin-shaped spring clip receptacle 3e of the semiconductor module 2 (paragraph 0049 and Fig. 5b).

Herring et al. (hereinafter "Herring") discloses a heat sink retention assembly 100 which includes a spring 116, a spring retention screw 106 and a spring spacer 112 (paragraph 0015 and Fig. 2). The spring retention screw 106 includes a proximal end 110 shaped for receiving a screw driver head or other suitable means for turning screw 106, and a distal end 108 suitable for being received within a base or supporting structure (paragraph 0016 and Fig. 1). The spring retention screw 106 is a means for retaining spring 116 in a compressed state (paragraph 0020).

Claims 1-4

Claim 1 is directed to a circuit board module having a circuit board, a circuit board component mounted to the circuit board, and a heat sink assembly. The heat sink assembly includes a base member which has a first edge and a second edge. The base member is configured to operate as a thermal conduit between a first location proximate to the circuit board component and a second location distal to the circuit board component. The heat sink assembly further includes a first rail member coupled to the base member along the first edge of

the base member and a second rail member coupled to the base member along the second edge of the base member. The heat sink assembly further includes an actuation mechanism coupled to the base member. The actuation mechanism is configured to move portions of the first and second rail members toward each other when the base member resides at the first location to fasten the base member to the circuit board component.

The cited references do not teach or suggest, either alone or in combination, a circuit board module having a heat sink assembly which includes (i) a base member, (ii) a first rail member coupled to the base member along a first edge of the base member and a second rail member coupled to the base member along the second edge of the base member, and (iii) an actuation mechanism coupled to the base member and configured to move portions of the first and second rail members toward each other when the base member resides at a first location to fasten the base member to a circuit board component, as recited in claim 1. Rather, Chandran discloses a socket 130 with a rotatably affixed retention arm 120 having a clamping bar 110 at a movable end of the retention arm 120. Accordingly, the clamping bar 110 cannot actuate rail members toward each other as required by claim 1.

The Office Action contends that the heat sink 210 of Chandran is a base member and that the retention arm 120 of Chandran is a rail member (see Figure A on page 2 of the Office Action), and further contends that the clamping bar 110 of Chandran is an actuation mechanism (see bottom of page 3 of the Office Action). Unfortunately, the clamping bar 110 is not coupled to the base member (i.e., the Chandran heat sink 210) as required by claim 1. Additionally, the clamping bar 110 is not configured to move portions of the rail members (i.e., the Chandran retention arms 120) toward each other as required by claim 1. As a result, it is unreasonable to assert that the Chandran clamping bar 110 is an actuation mechanism as recited in claim 1.

It is further unknown how one could modify or why one would want to modify the Chandran structure so that the clamping bar 110 coupled to the heat

sink 210, and so that the clamping bar 110 moved portions of the retention arms 120 toward each other in order to satisfy the requirements of claim 1. Clearly such a modification would not work since the opposite ends of the Chandran retention arm 120 is rotatably affixed to the Chandran socket 130. Moreover, there is clearly no need to move the retention arms 120 toward each other since Chandran goes through great length to explain that the Chandran structure works sufficiently with just one retention arm 120 (e.g., see paragraphs 0013 through 0015).

Furthermore, nothing in either Hellbruck or Herring explains how or why one would want to make such a modification to Chandran's clamping bar 110 which the Office Action argues is an actuation mechanism. Applicants wish to point out that the Office Action contends that Hellbruck shows an assembly where rail members (5) move towards each other. First, whether this contention is correct or not, Chandran and Hellbruck, alone or in combination, still do not teach or suggest the recited "actuation mechanism" as required by claim 1. Second, Applicants respectfully submit that Hellbruck does not show an assembly where an actuation mechanism is (i) coupled to a base member and (ii) moves rail members toward each other. There are no such actuation mechanisms shown in either reference. If the rejection of claim 1 is to be maintained, Applicants respectfully request that it be pointed out with particularity where the cited prior art teaches such an actuation mechanism.

For the reasons stated above, claim 1 patentably distinguishes over the cited prior art. Accordingly, the rejection under 35 U.S.C. §103(a) of claim 1 should be withdrawn, and claim 1 is in allowable condition.

Because claims 2-4 depend from and further limit claim 1, claims 2-4 are in allowable condition for at least the same reasons.

Claims 5-14

Claim 5 is directed to a heat sink assembly having a base member which has a first edge and a second edge. The base member is configured to operate

as a thermal conduit between a first location proximate to a circuit board component and a second location distal to the circuit board component. The heat sink assembly further includes a first rail member coupled to the base member along the first edge of the base member and a second rail member coupled to the base member along the second edge of the base member, and an actuation mechanism coupled to the base member. The actuation mechanism is configured to move portions of the first and second rail members toward each other when the base member resides at the first location to fasten the base member to the circuit board component.

The cited prior art does not teach or suggest, either alone or in combination, a heat sink assembly having a base member, first and second rail members, and an actuation mechanism configured to move portions of the first and second rail members toward each other, as recited in claim 5. Rather, as explained above in connection with claim 1, the cited references do not teach or suggest any actuation mechanism along these lines. Accordingly, claim 5 patentably distinguishes over the cited prior art for at least the same reasons as claim 1. Thus, the rejection under 35 U.S.C. §103(a) of claim 5 should be withdrawn, and claim 5 is in allowable condition.

Because claims 6-14 depend from and further limit claim 5, claims 6-14 are in allowable condition for at least the same reasons. Additionally, it should be understood that the dependent claims recite additional features which further patentably distinguish over the cited prior art.

For example, claim 14 requires that the actuation mechanism include displacement members where each displacement member includes (i) a threaded portion which threads into a respective threaded aperture defined by the base member and (ii) a head portion, coupled to the threaded portion, which is configured to engage an end of a torque wrench to provide that displacement member with rotational movement and linear displacement in response to rotation of the torque wrench. There is no such actuation member disclosed in any of the cited references. The Office Action contends that Herring discloses a

spring retention screw 106 and that the spring retention screw 106 is a displacement member of an actuation mechanism configured to move rail members toward each other, as required in claim 14. Such a contention is clearly incorrect. The Herring spring retention screw 106 is not configured to move rail members toward each other but instead is a means for retaining spring 116 in a compressed state (e.g., see paragraph 0020 of Herring). Accordingly, the Office Action has mischaracterized the teachings of Herring with respect to the Herring spring retention screw 106. Therefore, claim 14 further patentably distinguishes over the cited prior art.

Claims 15-18

Claim 15 is directed to a heat sink assembly having a base member which has a first edge and a second edge. The base member is configured to operate as a thermal conduit between a first location proximate to a circuit board component and a second location distal to the circuit board component. The heat sink assembly further has a first rail member coupled to the base member along the first edge of the base member and a second rail member coupled to the base member along the second edge of the base member, and means for moving portions of the first and second rail members toward each other when the base member resides at the first location to fasten the base member to the circuit board component.

The cited prior art does not teach or suggest, either alone or in combination, a heat sink assembly having a base member, first and second rail members, and means for moving portions of the first and second rail members toward each other. Rather, as explained above in connection with claim 1, the cited references do not teach or suggest any means for moving rail members toward each other. Accordingly, claim 15 patentably distinguishes over the cited prior art for at least the same reasons as claim 1. Thus, the rejection under 35 U.S.C. §103(a) of claim 15 should be withdrawn, and claim 15 is in allowable condition.

Because claims 16-18 depend from and further limit claim 15, claims 16-18 are in allowable condition for at least the same reasons.

Claims 19-20

To further the prosecution of this Application, Applicants have amended claim 19 to include all of the limitations of claim 20 which depended from claim 19. Claim 19, as amended, is directed to a method for attaching a heat sink assembly to a circuit board component. The heat sink assembly includes a base member, a first rail member coupled to the base member along a first edge of the base member and a second rail member coupled to the base member along a second edge of the base member. The method includes spreading ends of the first and second rail members of the heat sink assembly apart to provide clearance for the circuit board component, positioning a base member of the heat sink assembly proximate to the circuit board component, and moving the ends of the first and second rail members of the heat sink assembly toward each other to fasten the base member to the circuit board component. Moving the ends of the first and second rail members of the heat sink assembly toward each other includes rotating threaded displacement members which are configured to linearly displace relative to the base member of the heat sink assembly to pivot the first and second rail members relative to the base member in a hinge-like manner.

The cited prior art does not teach or suggest, either alone or in combination, a method for attaching a heat sink assembly to a circuit board component which involves rotating threaded displacement members which are configured to linearly displace relative to a base member of the heat sink assembly to pivot first and second rail members relative to the base member in a hinge-like manner. The cited references do not teach or suggest any such displacements members. In contrast to the contentions of the Office Action, the screws 106 of Herring are not configured to linearly displace relative to a base member of the heat sink assembly to pivot first and second rail members relative

to the base member in a hinge-like manner. Rather, the Herring screw 106 is a means for retaining spring 116 in a compressed state (e.g., see paragraph 0020 of Herring).

For the reasons stated above, claim 19 patentably distinguishes over the cited prior art. Accordingly, the rejection under 35 U.S.C. §103(a) of claim 19 should be withdrawn, and claim 19 is in allowable condition.

Newly Added Claims

Claims 21-28 have been added and are believed to be in allowable condition. Claims 21-22 depend from claim 1. Claims 23-24 depend from claim 5. Claims 25-26 depend from claim 15. Claims 27-28 depend from claim 19. Support for claims 21-28 is provided within the Specification, for example, on page 8, line 11 through page 11, line 2 and Figs. 3 and 4. No new matter has been added.

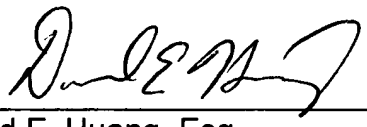
Conclusion

In view of the foregoing remarks, this Application should be in condition for allowance. A Notice to this affect is respectfully requested. If the Examiner believes, after this Amendment, that the Application is not in condition for allowance, the Examiner is respectfully requested to call the Applicants' Representative at the number below.

Applicants hereby petition for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this Amendment, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-3661.

If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 616-2900, in Westborough, Massachusetts.

Respectfully submitted,



David E. Huang, Esq.
Attorney for Applicant(s)
USPTO Registration No.: 39,229
Bainwood, Huang & Associates, LLC
Highpoint Center
2 Connector Road, Suite 2A
Westborough, Massachusetts 01581
Telephone: (508) 616-2900
Facsimile: (508) 366-4688

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